

CLAIMS

1. A touch probe, including
 - a casing (1) that defines a longitudinal geometric axis,
 - 5 • a movable arm-set (3) housed in the casing (1),
 - an arm (13) rigidly coupled to the movable arm-set (3), with an end extending out of the casing,
 - a feeler (15) coupled to said end of the arm (13), and
 - an electric switch (31) adapted for detecting
 - 10 displacements of the movable arm-set (3) with respect to the casing (1), and including
 - at least a stationary contact (44,45) and a movable contact (51),
 - a housing (33) enclosing said stationary contact (44,45)
 - 15 and said movable contact (51) and a contact protective fluid, and
 - a mechanical transmission device (61) adapted for transmitting displacements of the movable arm-set (3) to the movable contact (51),
 - 20 characterized in that
 - said protective fluid is an inert gas.
2. The probe according to claim 1, wherein said inert gas is nitrogen.
- 25 3. The probe according to claim 1 or claim 2, wherein the casing (1) encloses a sealingly closed chamber (19,22,34,35), the housing (33) of the electric switch (31) lying at the interior of said sealingly closed chamber
- 30 (19,22,34,35), the inert gas being present in the sealingly closed chamber (19,22,34,35).
4. The probe according to claim 3, including an antirotation device adapted for preventing rotations of the
- 35 movable arm-set (3) with respect to the casing (1) about a longitudinal axis, said antirotation device including a metal bellows (19) fixed to the ends of the movable arm-set

(3) and to a mechanical coupling element (20), rigidly coupled to the casing (1), the metal bellows (19) defining at least in part said sealingly closed chamber (19,22,34,35).

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5. The probe according to claim 3 or claim 4, wherein the movable arm-set (3) defines an axial through hole (27) communicating with said sealingly closed chamber (19,22,34,35), the inert gas being inserted in the
10 sealingly closed chamber (19,22,34,35) through said axial through hole (27).

6. The probe according to claim 5, further including a closure screw (28) and a ring gasket (29), wherein the
15 axial through hole (27) includes at least a threaded area, the closure screw (28) being adapted to be coupled to said at least one threaded area and to lock the ring gasket (29) for achieving the sealing of the axial through hole (27).

20 7. The probe according to one of the claims 1 to 6, wherein the mechanical transmission device (61) of the electric switch (31) includes an elongate mechanical body (63) between the movable arm-set (3) and the movable contact (51), substantially longitudinal guide surfaces
25 (70-72) and an elastic thrust element (73) adapted for urging the elongate mechanical body (63) against said guide surfaces (70-72).

8. The probe according to claim 7, wherein the elastic
30 thrust device includes a bent flat spring (73) and the elongate mechanical body (63) includes a transmission element (67) with a substantially spherical shape adapted for cooperating with the substantially longitudinal guide surfaces (70-72) urged by the bent flat spring (73), the
35 transmission element (67) including a substantially plane portion (77) adapted for cooperating with said bent flat spring (73).

9. The probe according to one of the claims from 1 to 8, wherein the movable arm-set (3) is supported in the casing (1) by means of a cone-ball coupling (9,5), the movable
5 arm-set and the casing defining annular surfaces (7,11) adapted to mutually contact and to cause, further to displacements of the arm (13), longitudinal displacements of the movable arm-set (3) suitable for being transmitted, by means of said mechanical transmission device (61), to
10 the movable contact (51) of the electric switch (31).

10. The probe according to one of the claims from 1 to 8, wherein the movable arm-set (3) is supported in the casing (1) by a coupling between plane annular surfaces (7,11),
15 the movable arm-set (3) and the casing (1) defining, respectively, a substantially spherical portion (9) and a substantially frusto-conical seat (5) adapted to mutually contact and to cause, further to displacements of the arm (13), the partial disengagement between the plane annular
20 surfaces (7,11) and the consequent longitudinal displacements of the movable arm-set (3) suitable for being transmitted, by means of said mechanical transmission device (61), to the movable contact (51) of the electric switch (31).

25 11. The probe according to one of the claims from 1 to 10, wherein the electric switch (31) includes a spring (53) for urging the movable contact (51) against said at least one stationary contact (44,45).

30 12. The probe according to claim 11, wherein said electric switch (31) includes at least two stationary contacts (44,45), said spring (53) being adapted for urging the movable contact (51) against the two stationary contacts
35 (44,45).